Legislative Branch

RL Number: _____

Date Submitted: _____

City Clerk, City Hall, Binghamton, NY 13901 607-772-7005

REQUEST FOR LEGISLATION

Requests for Legislation (RLs) may be submitted to the City Clerk's Office for consideration at City Council Work Sessions. RLs generated from within City Hall departments must be submitted to the Mayor, Comptroller and Corporation Counsel for review before submission. RLs generated by citizens may be submitted directly to the City Clerk's Office.

Applicant Information

Request submitted by: Gary R. Holmes, P.E.

Title/Department: Engineering - Acting City Engineer

Contact Information: grholmes@cityofbinghamton.com

RL Information

Proposed Title: A Resolution Accepting the findings of a Due Diligence Assessment on Impacts and Implementation of a Project Labor Agreement (PLA) for the Restoration/Rehab of the BJCJSP Performed by Nautilus Consulting, LLC and to Authorizing the City to Negotiate PLA.

Suggested Content: Accepting the findings of a Due Diligence on Impacts and Implementation of a Project Labor Agreement (PLA) for the Restoration/Rehab of the BJCJSTP and authorizing the City to negotiate a PLA.

Additional Information

Does this RL concern grant funding?	Yes ☐	No ☒
If 'Yes', is the required RL Grant Worksheet attached?	Yes ☐	No ☒
Is additional information related to the RL attached?	Yes ☒	No ☐
Is RL related to previously adopted legislation?	Yes ☐	No ☐

If 'Yes', please provide Permanent Ordinance/Resolution/Local Law number(s): _____

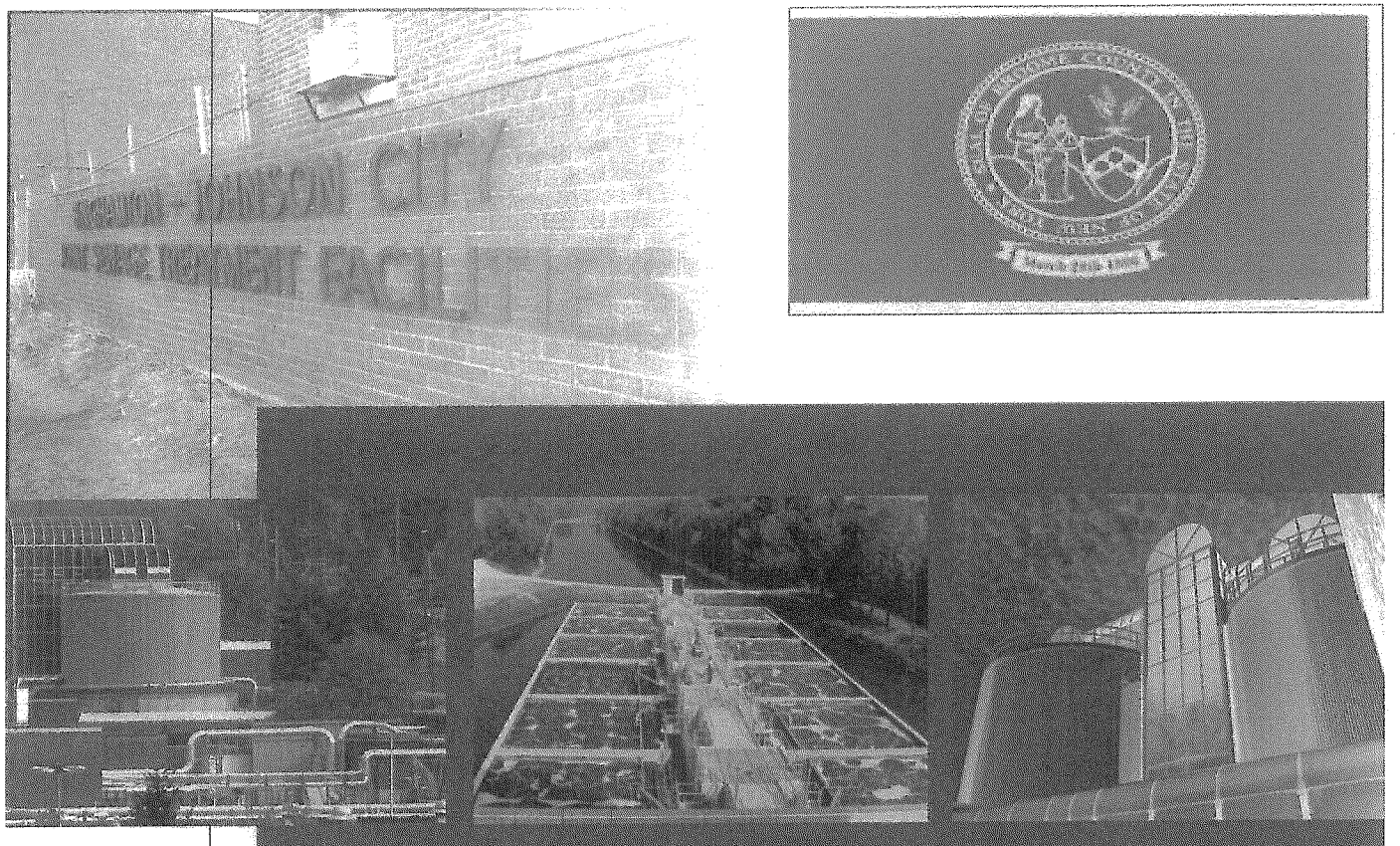
OFFICE USE ONLY

Mayor: _____

Comptroller: _____

Corporation Counsel: _____

Finance ☐ **Planning** ☐ **MPA** ☐ **PW/Parks** ☐ **Employees** ☐ **Rules/Special Studies** ☐



Restoration and Rehabilitation of the Binghamton-Johnson City Joint Sewage Treatment Plant

Due Diligence Assessment on Impacts and Implementation of a Project Labor Agreement for the Restoration and Rehabilitation of the Binghamton-Johnson City Joint Sewage Treatment Plant

Nautilus
CONSULTING, LLC

September 21, 2015

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I. The Project

The project that is under consideration for the use of a Project Labor Agreement (PLA) is the Restoration and Rehabilitation of the Binghamton - Johnson City Joint Sewage Treatment Plant (BJCJSTP) (the Plant). The BJCJSTP is a 35 million gallon per day (MGD) capacity wastewater treatment facility located in Broome County, NY. The Plant is jointly owned by the City of Binghamton and the Village of Johnson City and is managed by the Binghamton - Johnson City Joint Sewage Board (BJCJSB).

In May 2011, a 100 foot long section of one of the Plant's concrete walls failed spilling more than half a million gallons of sewage into the Susquehanna River. In September of 2011, significant flooding associated with Tropical Storm Lee inundated the BJCJSTP resulting in the damage of facilities throughout the plant. Portions of the plant that were severely damaged have not been placed back in service.

In addition to the immediate damage to the plant and impact to the environment, the damage that occurred has resulted in the ongoing inadequate treatment of the wastewater and a failure to comply with the State Pollution Discharge Elimination System (SPDES) Permit discharge limits. The City of Binghamton, the Village of Johnson City, and the BJCJSB have negotiated a Consent Order with the New York State Department of Environmental Conservation (NYSDEC) to develop and implement a plan to rehabilitate the plant and restore the wastewater treatment to required limits. The Consent Order requires the achievement of two (2) milestones. The first is the completion of construction by April 1, 2017 and the second is for the plant effluent to comply with the SPDES permit requirements no later than August 1, 2017.

The current plan is for the construction work to be performed under the contracts generally described as follows:

Contract 1 - Compost Facility Demolition
Contract 2 - Flood Damage Rehabilitation
Contract 3 - BAF Facility Demolition
Contract 4 - Motor Control Center Emergency Repair
Contract 5 - STP Restoration and Rehabilitation
Future Contracts - Disinfection, Solids Handling, and Outfall Upgrades

An additional contract(s) for a flood wall and flood protection are also a part of the overall program scope of work.

The Consent Order provides for a penalty of up to $38,500 per day for the failure to achieve the milestone.

The work covered under contracts 1 through 4 is already underway. It is our understanding that it is not the intent to include these contracts under the PLA. Contracts for the flood wall and flood protection work are also not intended to be included under the PLA.

Contract 5 and the future contracts for disinfection, solids handling, and outfall upgrades represent the bulk of the work and are the subject of this analysis. Together these contracts have a combined construction budget of $200 million. The best available information at this time is that the bids for Contract 5 will be received during the fall of this year with work to commence as soon as possible thereafter. We have assumed for the purposes of this analysis that PLA work will commence late in 2015 and will be completed 610 calendar days later with the achievement of the second project milestone on August 1, 2017. Work on the project will continue well past the August 1, 2017 milestone. The construction contracts in the program will be active through the end of 2018.

II. Purpose and Scope of this Report

Nautilus has been retained to prepare a due diligence analysis of the proposed project to determine if a PLA is beneficial to the project while meeting the criteria set forth under applicable New York State law and Executive Orders.

To demonstrate whether a typical PLA would be beneficial, the analysis needs to consider items such as potential labor cost savings due to the coordination of schedules and work rules among the various trades, the potential for savings in time and/or money through the use of Alternative Dispute Resolution (ADR) procedures to resolve any job site problems including jurisdictional disputes, to evaluate if the PLA will provide a framework for time and money savings as well as providing for the public good through ensuring labor harmony throughout the duration of the project, and to ascertain whether the PLA would provide access to a skilled labor force while ensuring opportunities for apprentices and for the development of the future labor force.

The scope includes the quantification of economic benefits to the project, the evaluation of the urgent need to complete the project and how a PLA might contribute to that goal, an investigation of non-quantifiable or indirect benefits, and an evaluation of the resulting bidding process to ensure that the bid process is fair, open, and competitive.

The analysis will address topics including available work force, worker efficiency, worker training, cost savings achievable under the PLA, schedule impact, safety, quality, and participation by MWBE firms

The report will provide a detailed review and analysis of the project and the conditions in the Broome County project area to determine if a PLA would be beneficial to the Project.

III. PLA History

Project Labor Agreements (PLA's) are project specific craft labor agreements that have been used for many years on both public and private projects of varying sizes. In New York, PLA's generally provide concessions from organized labor while adhering to the provisions of the New York State Labor Law to pay prevailing wages while maintaining a competitive bidding process open to both union and non-union contractors. PLA's are intended for use as a method to ensure the expeditious and cost effective accomplishment of large and/or complex projects which require the use of multiple trades and contractors.

The Supreme Court ruled in the 1993 Boston Harbor decision that PLA's were of value in serving the public interest and made their use by state, county, and municipal authorities possible. In 1997, then New York Governor George Pataki issued Executive Order No. 49 "Project Labor Agreements" allowing the use of PLA's. Their use was continued by subsequent Executive Orders under Governors Spitzer (No. 5 - 2007), Patterson (No. 9 - 2008), and Cuomo (No. 2 - 2011).

The New York State Legislature affirmed the guidelines provided in Pataki Executive Order No. 49 by enacting Section 222, Project Labor Agreements, of the New York Labor Law. The section provides that any state agency or department can require the use of a PLA if it is in the interest of the agency in obtaining the best work at the lowest price, in the prevention of fraud, favoritism or corruption, for the mitigation of the potential for delays, in obtaining cost savings, or to counter any history or potential for labor unrest.

Since their approval, PLA's have been used with success on numerous projects in New York. However, the use of a PLA is evaluated on a case by case basis. Each project must be analyzed to determine if the benefits and use of a PLA meet the guidelines established by the courts and executive orders.

IV. Local Labor Conditions

According to the Broome County Comprehensive Plan (the Plan) (available on the County website - See Attachment 1) the county had 200,600 residents as of 2010. The population is projected to decline approximately 0.4% by 2020. The workforce, which has already declined by 11,000 in the period from 1990 to 2011, will continue to decline as does the population but at a greater rate due to the impending retirement of older workers.

According to the Plan, the construction labor workforce in the Southern Tier region which includes Broome County is 9,540 or 3.6% of the total workforce. However, the projections for the required work force for the period from 2010 to 2020 are for an 8.1% increase yielding a net increase of 1,030 in the required construction labor force. This requirement is contrary to the overall declining work force. The Broome Tioga Workforce Investment Board acknowledges this by including Construction trades (Brick mason, carpenters, electricians, plumbers, pipefitters, construction workers, and sheet metal workers) in the list of demand occupations.

The declining population and work force have led to a situation where a great number of the Broome County work force come from other locales. Workers from locations including Syracuse, Albany-Schenectady-Troy, Rochester, Buffalo-Niagara Falls, Pennsylvania, and downstate areas including New York City, Northern New Jersey, and Long Island comprise 17.9% of the Broome County work force. In total over 21% of the Broome County work force travels greater than 50 miles from home to work in Broome County.

The recent economic turndown left most areas including Broome County with a sufficient supply of construction labor. However, the overall construction industry rate of employment and demand for labor has been increasing for the last several years and is likely to continue. Major projects in downstate areas with higher wages will need additional labor in the near future and will compete for the Broome County resources. These major projects include for example the new Tappan Zee Bridge, the rebuilding of LaGuardia Airport, numerous post Sandy storm repair and resiliency projects, plus a significant level of private construction particularly in high wage areas such as New York City. These lucrative projects seeking experienced workers will most likely impact the available labor force in Broome County.

The New York State Department of Labor has identified that there are available construction trade workers in Broome County. However, of the available workers, there is a very high percentage, exceeding 50% for some trades, where the available workers are identified as having zero to less than one year of experience. There is no

breakdown of the workers in the experience category of greater than one (1) year thus there is no data to specify how many of these available workers are actually fully trained and qualified journeymen.

The specific availability of labor to support the project is dependent on many outside factors beyond the scope of this report such as decisions to proceed or timing and schedules made on other projects by other owners. Thus any benefit of the PLA cannot be quantified with any reasonable degree of accuracy. However, it is reasonable to conclude that since the project will need a large well trained and experienced work force (approximately a 325 daily average with significantly higher peaks) that a PLA would provide a more immediate and efficient access to a pool of skilled journey level workers and apprentices. The PLA would allow a larger pool of available labor through the use of both union and non-union workers.

Note that a reduced or less competent work force could impact the timely completion of the work. This is discussed below in the section titled Schedule and Urgency.

V. Project Specific Labor Impacts

The Project work is under a Consent Decree requiring completion of the BAS reconstruction work by April 1, 2017 and compliance with the SPDES permit by August 1, 2017.

Sewage treatment plants are large infrastructure projects that require a skilled workforce to properly construct the facilities. Sewage treatment plants are required to be in continuous service for decades operating in all types of weather and under harsh conditions which include the presence of corrosive materials and potentially explosive gases. Proper construction to the highest quality is necessary to insure that these plants remain in service. Failures within these facilities, as is the current situation at BJCJSTP, can result in damage to the environment, regulatory violations with accompanying penalties, and potential conditions detrimental to the public good.

The construction budget for the work to be performed under the proposed PLA is $200 million. Nautilus has determined that the direct labor costs excluding any overhead, profit, and field expenses is $54,500,000 reflecting approximately 930,000 man-hours of work.

Our review of the project indicates that the necessary trades to accomplish the work generally include carpenters, drywall finishers, electricians, insulators, laborers, painters, pipefitters, plumbers, sheet metal workers, sprinkler fitters, iron workers, millwrights, roofers, lathers, masons, and operating engineers.

An inspection of the labor agreements for these trades indicates that the holidays and starting times are generally coordinated among the trades. Thus, a PLA would offer no significant cost advantage through the use of a single agreement standardizing work hours and holidays over the existing individual agreements.

Where a PLA could provide a cost savings beneficial to the project would be in wage rates. Often PLA agreements provide for a wage freeze for the duration of the project. Assuming that the PLA freezes wages and benefits at current levels, the PLA would provide a cost reduction of $1,565,332 (See Attachment 2) resulting in a **$1,900,000** reduction in bid prices when factoring in contractor OH&P.

Another potential source of cost savings beneficial to the project would be the increased use of apprentices. A difficulty in determining the benefits of the PLA is that a baseline apprenticeship participation must be determined assuming a PLA is not utilized. However, this is complicated by the fact that non-union contractors may not have formal apprenticeship programs whereas union contractors do have such

programs. A conservative approach to analyzing the potential cost savings is to assume that without a PLA, the union contractors would have utilized the maximum number of apprentices allowed under the current union agreements and then compare that scenario to likely apprentice utilization under a PLA. A PLA can include provisions for the use of a greater percentage of apprentices than there would be in a non-PLA project. Assuming that the PLA results in apprentices performing an additional 5% of the total project man-hours, Nautilus calculates a reduction in the bid prices of **$1,125,000** including all normal contractor mark-ups.

The efficiency of a well-trained labor force working in harmony without outside distractions also represents a savings to the project. Because of the complexity and demands of working on an active sewage treatment plant, we have estimated a 5% productivity gain when compared to a non-PLA project with the potential of mixed union and non-union workers without the benefits of a prior agreement. Knowing the status of the work force in advance will likely result in a reduction in the bid prices in the amount of **$960,000**. The apprentice hours are not included in the calculated gain for improved efficiency.

VI. Other Economic Labor Benefits

The use of a PLA can ensure project savings and flexibility through the use of alternative dispute resolution (ADR) procedures in response to job site problems and jurisdictional disputes. The number of variables in calculating this benefit to the project are so numerous that any calculation is suspect at best and thus this benefit is un-quantifiable. This and other indirect benefits are discussed and summarized elsewhere in this report.

A potentially quantifiable cost reduction benefit under a PLA is for the Contractor(s) to group together the Workmen's Compensation insurance for all participating contractors and subcontractors with a resulting lower composite rate. If this can be implemented the BJCJSB might benefit from the contractor's reduction in rate which can translate into lower contractor bid prices.

Calculating the savings using a conservative 10% reduction in the workmen's compensation anticipated actual premiums results in approximately a **$370,000** cost savings to the project in the form of lower bid prices. Greater rate reductions, which are possible, would result in additional savings.

VII. Schedule and Urgency

One of the most important aspects that will define the success of this project is the need to complete the project on time. Completing a project on time generally is an important indicator of meeting the overall budget. However, in the case of the BJCJSTP the timely completion of the work takes on a greater urgency.

The Plant is currently not meeting its SPDES discharge permit limits. The long term damage to the local environment is beyond the scope of this report. However, it is obvious that delays to the work will be detrimental to the residents of Broome County as well as the residents of all areas that may be impacted by the higher than allowable discharges of the plant.

While the environmental impacts themselves may not be quantifiable, the penalties associated with failing to complete the work and meet the SPDES permit requirements are an identified cost of up to $38,500 per day for each day beyond the required milestone dates that the work is not completed or the permit requirements are not met.
Any rehabilitation work on an operating sewage treatment plant is a complex endeavor requiring great coordination of work activities. An impact to any part of the work likely cascades through the project resulting in delays to the overall completion. Many of the potential delays are beyond the control of the project team while others are related to the design of the work. However, the actual performance of the work is not only one of the most significant potential schedule impacts, it is also one that can be mitigated by the use of a PLA. A PLA will eliminate the potential for strikes, lockouts and labor unrest. Harmony in the labor force results in greater productivity and decreased lost time providing the best opportunity to achieve the project milestone dates. Additionally, if necessary the local labor unions working under the terms of the PLA can be invaluable in assisting the contractors in finding qualified labor from other locals outside the immediate area.

A PLA will also allow for the use of single prime contracts in lieu of the multiple prime contracts typical under the Wicks law. A single prime general contractor will be able to better, and in a timely manner, coordinate all the trades reducing or eliminating potential costly delays to this project which is of particular importance because of the consent order penalties.

Nautilus has calculated an available overall project performance period of 610 calendar days to achieve both milestones. This is a very aggressive schedule and will require an average daily labor force of 325 workers with peak days likely to be significantly higher. With the complexity of the work, the size of the labor force, and

the need for coordination and cooperation among the various trades and contractors, a labor related delay whether due to productivity, coordination, or some work stoppage or slowdown could easily extend the construction period by at least 5%. A 5% increase translates into a one month (31 day) delay which would result in penalties of $1,193,500.

Thus a PLA provides a minimum schedule related cost benefit of **$1,193,500.**

VIII. Bidding and Competition

If the contracting community perceives a project to be union, many if not all of the non-union contractors will most likely refrain from bidding. Similarly, if a project is perceived as non-union, union contractors may refrain from bidding. Either perception acts to lower the pool of bidders.

For this reason, a PLA which clearly provides that the project is open to union and non-union contractors without concerns of labor unrest will likely increase the number of bidders. Increased competition will generally result in lower bid prices to the owner. Similarly, prime contractors will have a larger pool of potential subcontractors and thus more competitive subcontract bids which contribute to the overall savings to the project.

This same open climate will encourage the participation of both union and non-union vendors, fabricators, and suppliers which again contributes to the overall savings to the project.

In the case of most public works entities like the BJCJSB, the public bid solicitation process already has goals for MWBE participation and procedures for the prevention of fraud, favoritism, and corruption. The terms of a PLA can reinforce these goals and safeguards and even provide for increased MWBE participation. Increased participation at the prime, subcontractor, or vendor/supplier/fabricator level either union, non-union, or MWBE in the bidding process not only yields transparency and reduces the winning bid prices but through the greater number of participants reduces the likelihood of fraud, favoritism, and corruption resulting in a process that is fair, open, and competitive.

The advantages of increased competition resulting from the PLA are obvious but not readily quantifiable and thus no specific value has been assigned in this report.

IX. Training and Participation

A long term benefit to the community by the use of a PLA will be to not only resolve a major infrastructure issue but also to provide the groundwork for the future workforce in the region. The restoration and rehabilitation of the BJCJSTP is a major undertaking requiring in excess of 930,000 man-hours of labor. This large volume of work can serves as a training ground for new workers and as an opportunity for minorities and women to join the work force.

The provisions of a PLA will bring the apprenticeship programs of all the trades to the project allowing this public project to serve as a training ground for the workforce of the future. The provisions of the unions as well as provisions that can be incorporated into the conditions of the PLA can ensure nondiscriminatory hiring and the opportunity for all including minorities and women to become apprentices and be a part of the future workforce of Broome County.

Provisions of the PLA can provide for apprenticeships beyond the typical levels provided by the local unions and help to create a climate where all labor hiring practices are non-discriminatory. However, the development of the future workforce, both union and non-union, is not a quantifiable cost benefit to this project but is obviously of incalculable value the public.

The cost savings of additional apprentices are addressed elsewhere is this report.

X. Safety

Safety on the jobsite is of paramount importance. Work in an operating sewage treatment plant is a difficult task requiring a highly skilled and highly trained work force. In addition to the normal difficulties in performing work in an operating plant, the schedule demands of this project require large numbers of workers (average daily crew size of approximately 325 workers) who by their very number and the need to accomplish numerous tasks concurrently will be working in close proximity to each other. Large crews in close proximity with difficult and complex work create an environment for potential accidents resulting in injuries or death to workforce. Safety training will be critical to mitigate the risks of the work environment. A PLA will provide that the workers have been trained through the various organized labor training programs, will have access to receive training, or through the apprenticeship programs will be trained from the start in proper and safe work techniques and methodologies. The enhanced training and skill level of the workforce will translate to safer working conditions.

The safety and well-being of each worker has no quantifiable cost benefit but is obviously of incalculable value.

XI. PLA - Implementation and Likely Provisions

A PLA must be in place and provided to all perspective bidders as a part of the bid package. The urgency of the work to rehabilitate and restore the BJCJSTP requires that the bid process proceed in the very near future. Thus, if a PLA is to be implemented it must be done so as soon as possible. Because of the urgency of this project, any project delays due to the development and implementation of the PLA would offset a number of the benefits potentially provided through the PLA of which the most notable would be the failure to achieve the Consent Order milestones resulting in additional costs, penalties, and further environmental damage.

For purposes of this analysis we have assumed that the PLA will include but not be limited to the following general provisions:

1. Both union and non-union contractors will have equal opportunity to participate in the project.
2. Both union and non-union subcontractors, suppliers, vendors, and fabricators will have equal opportunity to participate in the project.
3. Include provisions allowing non-union contractors to utilize their own regular work force for all or at least a fixed percentage of their work.
4. MWBE firms will be encouraged and have equal opportunity to participate. Goals for MWBE firms will at least meet and preferably exceed the minimum requirements established by the New York State Environmental Facilities Corporation.
5. Include favorable provisions for MWBE contractors to utilize their own work force for all or at least a fixed percentage of their work.
6. Increased apprenticeship training and participation.
7. Incorporation of safety training and safe work practices for all workers.
8. Agreement to resolve jobsite problems and jurisdictional disputes through Alternate Dispute Resolution proceedings.
9. Agreement prohibiting strikes, lockouts, or any labor unrest with a commitment to work diligently toward the timely completion of the work.
10. Wages and benefits will be frozen at current rates for the duration of the project.
11. Establishment of an insurance program providing at least a project specific workmen's compensation insurance policy at reduced rates and other insurance program savings as may be identified.

The actual PLA will be a more detailed document with more provisions than listed above. The provisions listed here are general and meant to convey the major concept and principles that will influence the project.

XII. Findings and Conclusions

The analysis detailed above yields results that can be categorized as quantifiable benefits and non-quantifiable/indirect benefits. These can be summarized as follows:

Summary of Quantifiable Benefits	
Maintain wages and benefits at current rates	$1,900,000
Increased use of Apprentices	$1,125,000
Efficiency of Labor	$ 960,000
Workmen's compensation insurance program	$ 370,000
Reduced liability for Penalties	$1,193,500
Total	$5,548,500

Summary of Non-Quantifiable/Indirect Benefits

- Greater availability and access to skilled labor.
- Increased bid competition.
- Increased subcontractor/vendor/supplier/fabricator competition.
- ADR to resolve disputes and avoid delays.
- Delay avoidance through agreements for no strikes, lockouts, or labor unrest.
- Site and worker safety
- Long term benefits of training provided to the future workforce of the County
- Avoidance of favoritism, fraud, and corruption through open non-discriminatory bidding and hiring practices.
- Assistance from local labor unions in finding qualified labor (if necessary) from locals outside the immediate area.
- Single prime general contractor coordinating the work of all trades

The schedule, timely performance, and completion of the work is of greater than normal importance for this project because of the Consent Decree penalties and the ongoing impacts to the environment. We have chosen to include in the quantifiable impacts the benefit of reduced costs through the avoidance of only one (1) month penalties. However, there is a significant risk of much greater penalties if anyone of a number of situations occur. First, the available time to complete the work within the allowed period results in the need for a significant sized workforce that we have calculated at a daily average of 325 workers. Actual peak days will be much greater. The size of the workforce combined with the relatively short duration of the work and the complexity of a wastewater treatment plant make the issues of labor availability and productivity crucial to the success of the project.

There are too numerous combinations of events that could affect labor availability and productivity to make any calculated number representative of a real savings. However, it can be stated that a PLA would mitigate many of these potential impacts resulting in a great, if not defined, savings to the project in both time and money.

The analysis indicates that a PLA would provide significant benefits in time, cost savings, and mitigation of risks while fostering greater participation of and competition among union, non-union, and MWBE firms. As detailed above, Nautilus has calculated a minimum cost savings to the project of **$5,548,500**. The timely completion will also mitigate the ongoing impacts to the environment. The PLA would also provide for enhanced worker safety and efficiency through formalized safety and apprenticeship programs. Long term beyond the present, the project with the PLA would contribute to the training of the future workforce of Broome County.

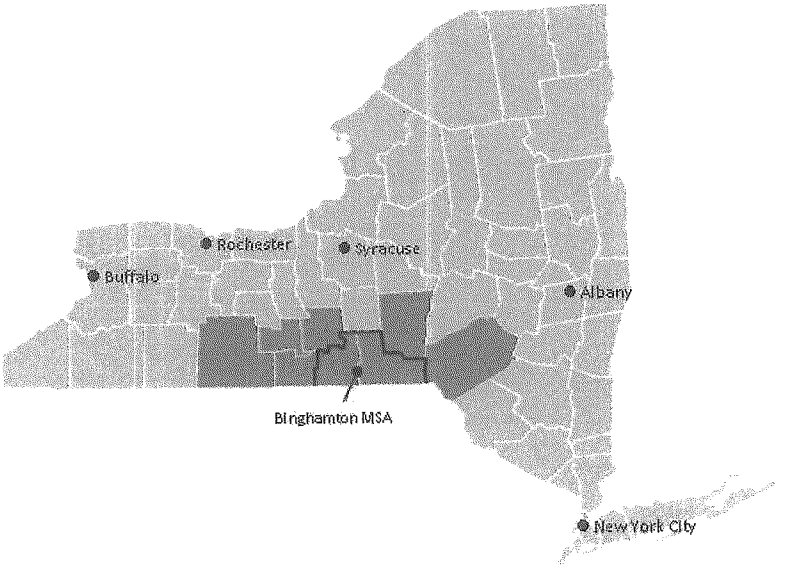
Nautilus
CONSULTING, LLC

Attachment 1

Introduction

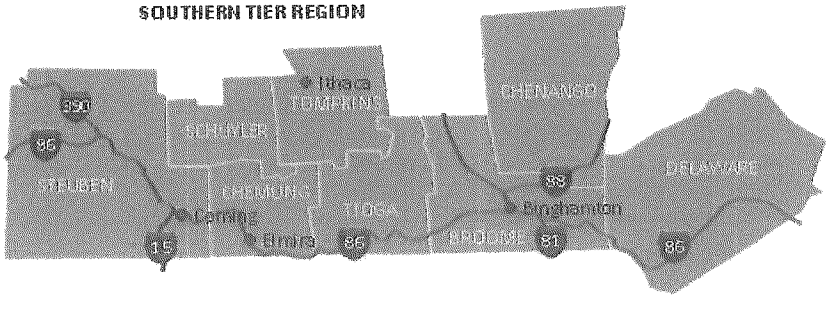
Broome County contracted with E.M. Pemrick and Company to prepare the Economic Analysis Component of the County's Comprehensive Plan. The analysis is intended to update portions of a countywide economic development strategy, adopted in 2002, known as the *BCPlan*. Elements of the scope of work for the Economic Analysis include an economic profile of Broome County, a shovel-ready sites assessment, a profile of the local workforce, a target industry analysis, and an incentive evaluation. This document is the second of five deliverables.

This chapter refers to a number of different geographies for analysis, depending on the availability of data. They are described below:



- **Broome County** – With 200,600 residents in 2010, Broome County is the most populous county in New York's Southern Tier region. It is bordered by Tioga County to the west, Delaware County to the east, and Cortland and Chenango Counties to the north; the Northern Tier of Pennsylvania adjoins Broome County to the south.

- **Southern Tier Region** – With a 2010 population of 657,909, the Southern Tier region as defined by Empire State Development encompasses the counties of Broome, Chemung, Chenango, Delaware, Schuyler, Steuben, Tioga and Tompkins. Major cities in the region, in addition to Binghamton, include Elmira, Corning, and Ithaca.



Unless otherwise noted, the analysis draws upon quantitative data from the U.S. Bureau of Labor Statistics, the U.S. Census Bureau, and the NYS Department of Labor, including Occupational Employment Statistics and Local Employment Dynamics.

Population Change

Data from the U.S. Census Bureau indicate that the Broome County population grew relatively slowly during the last half of the twentieth century. Between 1950 and 2000, the County added approximately 16,000 residents, an increase of 8.6%. This was less than half the rate of population growth in the Southern Tier region (19.5%) and considerably less than the statewide growth rate (28.0%).

The decennial census shows that Broome County had 200,600 residents in 2010, with little change from 2000. The Southern Tier experienced stagnant or declining population levels, while the number of people in New York State overall increased by 2.1%.

Table 1: Population Change

	2000	2010	% Change, 2000-2010	2020 (projected)	% Change, 2010-2020 (projected)
Broome County	200,536	200,600	0.03%	199,743	-0.4%
Chenango County	51,401	50,477	-1.8%	48,154	-4.6%
Cortland County	48,599	49,336	1.5%	49.008	-0.6%
Delaware County	48,055	47,980	-0.2%	46,717	-2.6%
Tioga County	51,784	51,125	-1.3%	48,337	-5.5%
Susquehanna County (PA)	42,238	43,356	2.6%	61,630	42.1%
Southern Tier Region	657,297	657,909	0.1%	643,719	-2.2%
New York State	18,976,457	19,378,102	2.1%	19,697,021	1.6%
United States	281,421,906	308,745,538	6.2%	333,896,000	8.1%

Sources: 2000 and 2010 data from U.S. Census Bureau, Decennial Census, Summary File 2. Population projections for the U.S. from the U.S. Census Bureau, 2012 National Projections; for New York counties from Cornell University's Program on Applied Demographics; and for Susquehanna County, PA from the Pennsylvania State Data Center.

Between 2010 and 2020, Broome County is projected to decline by approximately 850 residents, or -0.4%. Most surrounding counties are also expected to decrease in population. The sole exception appears to be Susquehanna County in Pennsylvania, which is projected to have a dramatic increase. The Pennsylvania State Data Center formulated its projections in 2008, however, and County planners do not believe that this unusually high rate of growth will hold up.[1]

Individuals born outside the United States comprise less than 6% of the Broome County population overall, but they represent approximately 15% of the student enrollment at Binghamton University, one of the top U.S. universities for international students. Between 2000 and 2010, the number of foreign-born residents in the county increased by 7.8%, to 11,361. Of these, 45.8% were born in Asia, 31.9% in Europe, and 15.4% in Latin America. More than 60% are naturalized U.S. citizens.

[1] "Census reveals ups, downs and questions," *Susquehanna Independent Weekender*, March 30, 2011.

Age/Age Cohorts

The generational mix in Broome County and the Southern Tier region is consistent with state and national trends and reflects an aging population. In 2010, Broome County had a median age of 40.2. In neighboring counties, the median age ranged from 35.8 in Cortland County to 45.4 in Delaware County, compared to 38.0 for New York State.

Table 2: Median Age and Age Cohorts

	Median Age	Under Age 20	20-24	25-54	55-64	Age 65 and Over
Broome County	40.2	24.3%	8.9%	37.9%	12.6%	16.3%
Chenango County	42.9	25.2%	5.0%	39.1%	14.0%	16.6%
Cortland County	35.8	26.8%	11.7%	36.3%	12.1%	13.1%
Delaware County	45.4	23.6%	5.9%	35.6%	15.4%	19.4%
Tioga County	42.5	25.8%	4.9%	40.4%	13.2%	15.7%
Susquehanna County (PA)	45.1	23.6%	4.7%	38.7%	14.9%	18.1%
New York State	38.0	25.3%	7.3%	42.0%	11.9%	13.5%
United States average	37.2	27.0%	7.0%	41.2%	11.8%	13.0%

Source: U.S. Census Bureau, 2010 Census, Summary File 2.

Although employed individuals age 16 years and over are counted as part of the labor force, the prime working age population is considered to be the 25-54 age cohort. This is when the likelihood of labor force participation is highest.

As shown in **Table 2**, of the 200,600 people living in Broome County, 75,931 (37.9%) were between the ages of 25 and 54 in 2010, while 25,201 (12.6%) were ages 55 to 64. Compared to the state, Broome County has a higher proportion of residents age 65 and over. Generally speaking, these individuals are more likely to be retired and not available to participate in the labor force.

Over the next ten years, the aging of the population will continue to have a dramatic impact on the size and composition of the workforce. With limited growth expected in Broome County, the working-age population will begin to comprise a smaller share of the population, as people now in the 55-64 age cohort start to retire.

Educational Attainment

As shown in **Table 3**, educational attainment levels in Broome County are somewhat typical of upstate New York, showing a higher rate of high school completion than state and national averages. According to the Census Bureau, an estimated 119,000 Broome County residents age 25 and older (or 89%) had at least a high school diploma or its equivalent compared with 84.8% in New York State, while 34,000 (25.5%) had a bachelor's degree or higher. Compared to its neighbors, Broome County had a larger percentage of adults with a graduate or professional degree (11.6%).

Table 3: Educational Attainment, Adults Age 25 and Older

Adults Age 25 and Older	% with High School Diploma or Higher	% Bachelor's Degree or Higher	% Graduate or Professional Degree
Broome County	89.0	25.5	11.6
Chenango County	87.0	17.7	7.5
Cortland County	89.8	23.4	9.9
Delaware County	86.3	19.5	8.2
Tioga County	91.0	22.2	9.5
Susquehanna County (PA)	89.0	17.4	6.3
New York State	84.8	32.6	14.0
United States average	85.6	28.2	10.5

Source: U.S. Census Bureau, 2009-2011 American Community Survey 3-Year Estimates.

In terms of educational attainment by age (**Table 4**), the proportion of the population with a four-year, graduate, or professional degree is more than 30% among Broome County residents between the ages of 25 and 34, and 27.9% among those ages 35 to 44. This is higher than among the same age cohorts in neighboring counties.

Table 4: Educational Attainment by Age Group, Adults Age 25 and Older

	Broome County	Chenango County	Cortland County	Delaware County	Tioga County	Susquehanna County (PA)
Ages 25 to 34						
% Bachelor's Degree or Higher	30.1	17.6	26.4	18.0	26.7	21.5
% Graduate or Professional Degree	13.2	7.4	7.1	4.1	11.0	4.5
Ages 35 to 44						
% Bachelor's Degree or Higher	27.9	21.1	25.9	20.1	24.6	18.7
% Graduate or Professional Degree	12.8	9.9	12.4	7.7	11.5	5.8
Ages 45 to 64						
% Bachelor's Degree or Higher	27.1	19.4	23.9	20.3	23.6	18.1
% Graduate or Professional Degree	12.3	8.0	9.7	8.7	10.5	7.3
Age 65 and over						
% Bachelor's Degree or Higher	18.0	12.0	17.8	18.6	14.8	13.1
% Graduate or Professional Degree	8.4	4.9	10.1	9.4	5.2	6.0

Source: U.S. Census Bureau, 2009-2011 American Community Survey 3-Year Estimates.

Labor Force

The labor force includes people who are currently employed and those who are unemployed and seeking jobs. In contrast to employment by industry data, the estimates in the table below are by place of residence, rather than place of work.

Table 5: Resident Labor Force

	1990	2000	2011	% Change, 1990-2000	% Change, 2000-2011
Broome County	105,000	98,300	93,400	-6.4%	-5.0%
Chenango County	25,200	24,500	24,600	-2.8%	0.4%
Cortland County	24,600	24,200	24,200	-1.6%	0.0%
Delaware County	21,700	22,200	21,600	2.3%	-2.7%
Tioga County	26,300	26,600	25,000	1.1%	-6.0%
Susquehanna County (PA)	18,300	20,400	23,100	11.5%	13.2%
Southern Tier Region	326,700	322,800	316,300	-1.2%	-2.0%
New York State	8,808,900	9,167,000	9,504,200	4.1%	3.7%

Source: NYS Department of Labor and PA Department of Labor and Industry, Local Area Unemployment Statistics, and E.M. Pemrick and Company.

On average, there were 93,400 residents in the labor force in Broome County in 2011, with 8,000 seeking jobs, resulting in an unemployment rate of 8.5%. As of February 2013, there were 8,800 people in Broome County actively looking for work, with an unemployment rate of 9.5%.

The labor force participation rate is the labor force (employed and unemployed) divided by the population age 16 and over. It is one indication of whether more people might be drawn into the labor force if suitable jobs were available or wages were higher. According to the U.S. Census Bureau, Broome County has a labor force participation rate of 59.6%. The rate for New York State is 63.6%.

Table 6: Labor Force Participation Rates

Broome County	59.6%
Chenango County	60.3%
Cortland County	60.1%
Delaware County	58.9%
Tioga County	66.6%
Susquehanna County (PA)	60.9%
New York State	63.6%

Source: U.S. Census Bureau, 2009-2011 American Community Survey 3-Year Estimates.

The labor force participation rate can be influenced by the number of residents, particularly those between the ages of 16 and 24, who are still attending school. Tompkins County, which also has a sizable college student population, has a labor force participation rate of 60.4%.

Consistent with local population trends, the size of the labor force in Broome County is declining. Between 1990 and 2011, the resident labor force declined by more than 11,000. Of the surrounding counties, only Susquehanna County had a net increase in its labor force.

Employment by Occupation

Table 7 below presents employment in the Southern Tier region by occupational category.[2] While information on industry relates to the type of business conducted by a person's employer, occupation describes the kinds of work a person performs on the job.

Table 7: Occupational Employment Statistics, Southern Tier Region

Occupational Group	Employment		Median Annual Wages
	Number	Percent	
Office and Administrative Support	44,340	16.7%	$29,220
Education, Training, and Library	28,010	10.6%	$46,950
Sales Related	24,490	9.2%	$22,370
Food Preparation and Serving Related	21,990	8.3%	$18,960
Production Related	20,900	7.9%	$32,240
Health Care Practitioners and Technicians	18,850	7.1%	$58,370
Transportation and Material Moving	13,100	4.9%	$27,560
Health Care Support	10,530	4.0%	$27,460
Management	10,370	3.9%	$85,380
Installation, Maintenance, and Repair	9,700	3.7%	$37,560
Construction and Extraction	9,540	3.6%	$40,050
Building and Grounds Cleaning and Maintenance	9,210	3.5%	$22,500
Business and Financial	8,390	3.2%	$56,410
Architecture and Engineering	7,480	2.8%	$69,210
Personal Care and Service	6,940	2.6%	$20,750
Community and Social Services	5,600	2.1%	$39,940
Protective Service	5,130	1.9%	$49,210
Computer and Mathematical	4,060	1.5%	$59,900
Arts, Design, Entertainment, Sports, and Media	2,820	1.1%	$37,160
Life, Physical, and Social Science	2,110	0.8%	$55,670
Legal	1,060	0.4%	$85,950
Farming, Fishing, and Forestry	430	0.2%	$29,260
Total, All Occupations	**265,070**	**100.0%**	**$33,920**

Source: New York State Department of Labor, Occupational Employment Statistics Survey, and E.M. Pemrick and Company.

Six major occupational groups account for 60% of the total employment in the Southern Tier region: office and administrative support, education and training, sales related, food preparation, production related, and health care practitioners and technicians.

Generally speaking, about 63% of the workforce in the region is in traditionally "white-collar" occupations and 20% is in traditionally "blue-collar" occupations; the remaining 16% are employed in

[2] Based on the Standard Occupational Classification (SOC) system, which organizes the occupations held by workers into 22 major occupational categories. Data are provided for the Southern Tier region rather than the Binghamton MSA to facilitate comparison with the long-term projections (which are only available by region) in the next section.

service occupations. Compared to the U.S. as a whole, the Southern Tier has a higher concentration of its workforce (as indicated by location quotients exceeding 1.20) in education, training, and library occupations (1.61), architecture and engineering (1.57), community and social services (1.41), and health care practitioners and technicians (1.28). Many of these occupations are associated with key sectors of the economy, such as education and health care, although engineers are employed by a broad spectrum of industries.

A recent report from the NYS Department of Labor examines science and engineering (S&E) jobs in the state based on National Science Foundation definitions. In 2010, there were 312,660 S&E jobs in New York State, accounting for 3.7% of all statewide employment. *Within* the state, the share of the workforce engaged in S&E occupations was highest in the Southern Tier region, at 5.2%. The Southern Tier workforce also had the highest proportion of engineers, physical scientists, and mathematical scientists than any other region. The article concludes: "While most S&E jobs require more years of college, the stronger employment outlook and higher wages they offer often seem worth the investment." Workers with skills in science and engineering are expected to be in great demand as the economy becomes more knowledge-intensive.[3]

Occupations in Demand

Workforce projections developed by the NYS Department of Labor indicate that the *fastest growing* occupational categories in the Southern Tier over the ten-year period from 2010 to 2020 will be personal care and service occupations, health care support occupations, health care practitioners and technical occupations, and computer and mathematical occupations (**Table 8**). However, the top occupational categories will have the largest number of openings, mostly to replace existing workers who change jobs or retire.

[3] "Down to a Science: Science and Engineering Jobs in NYS," *Employment in New York State*, July 2011. Accessed at http://www.labor.ny.gov/stats/pdfs/envs0711.pdf.

Table 8: Long-Term Workforce Projections by Occupational Categories, Southern Tier

Description	Projected Change, 2010-20		Annual Average Openings	
	Percent	Net	Replacement*	Total**
Personal Care and Service	18.1%	2,070	270	480
Health Care Support	12.9%	1,540	170	320
Health Care Practitioners and Technicians	12.2%	2,660	440	710
Computer and Mathematical	10.7%	510	100	150
Transportation and Material Moving	9.6%	1,480	370	520
Community and Social Services	9.6%	640	150	210
Food Preparation and Serving Related	8.1%	1,880	860	1,050
Construction and Extraction Occupations	8.1%	1,030	270	380
Business and Financial	7.6%	780	210	290
Legal	7.1%	130	30	40
Arts, Design, Entertainment, Sports, and Media	7.0%	430	160	210
Installation, Maintenance, and Repair	6.8%	740	240	320
Building/Grounds Cleaning and Maintenance	5.6%	700	220	290
Education, Training, and Library	5.6%	1,860	680	870
Sales Related	5.5%	1,500	870	1,030
Life, Physical, and Social Science	3.9%	100	80	100
Protective Service	2.0%	110	140	160
Office and Administrative Support	1.8%	890	1,030	1,230
Production Related	0.4%	90	440	530
Management	0.3%	40	280	310
Architecture and Engineering	-0.4%	-30	180	200
Total, All Occupations	**6.2%**	**19,140**	**7,210**	**9,410**

Source: New York State Department of Labor, Occupational Employment Statistics Survey, and E.M. Pemrick and Company.
* - Net replacement openings is an estimate of the need for new work force entrants to replace workers who leave an occupation and start working in another occupation, stop working altogether (i.e., retire) or leave the geographic area.
** - Total job openings represent the sum of employment increases and net replacements. If employment change is negative, job openings due to growth are zero and total job openings equals net replacements.

Other categories projected to grow at above-average rates in the eight-county region include transportation and material moving occupations, community and social services occupations, food preparation and serving related occupations, and construction occupations.

Workforce Commutation Patterns

Produced by the U.S. Census Bureau in conjunction with the Local Employment Dynamics program, OnTheMap is an online application that provides information on where workers are employed and where they live with companion reports on age, earnings, industry distribution, and other local workforce indicators. It can be used to determine where workers who are employed in a specific geographic location live, how many jobs are located within a certain distance of an educational

facility, or what the workplace destinations are for residents living in a particular neighborhood. The data provide planners, economic development specialists, job seekers, employers, and other users with information needed to understand workforce commutation patterns.

The figures below indicate where individuals *employed* in Broome County live. The analysis is restricted to those working in primary jobs as of 2010, the most recent year for which data are available.[4] (Primary jobs include both public- and private-sector jobs covered under the state unemployment insurance system. A *primary* job is the highest paying job for an individual worker for the year.)

In the map below, employment locations in the County are represented by the blue thermal density overlay showing jobs per square mile. Work locations are also aggregated into census blocks in the Points Overlay – each block represented by one blue dot. The map reflects the fact that employment is concentrated in the City of Binghamton and stretches west into Johnson City, Endicott, and eventually Owego (Tioga County) along Route 17. There are also clusters of employment at industrial parks in Conklin and Kirkwood.

Overall, 68.1% of those employed in Broome County reside within the Binghamton MSA; this includes approximately 51,393 Broome County residents and 5,855 commuting from neighboring Tioga County. Many workers travel from other metro areas in upstate New York, including Syracuse (3.3%), Albany-Schenectady-Troy (2.4%), Rochester (2.1%), and Buffalo-Niagara Falls (1.2%). Broome County also attracts in-commuters from as far away as the New York-Northern New Jersey-Long Island metropolitan area. The proportion of workers from "downstate" is surprisingly high – 3.9% - but these employees do not appear to be concentrated at any one location.[5]

Table 9: Job Counts by Distance Traveled from Home, Broome County Laborshed

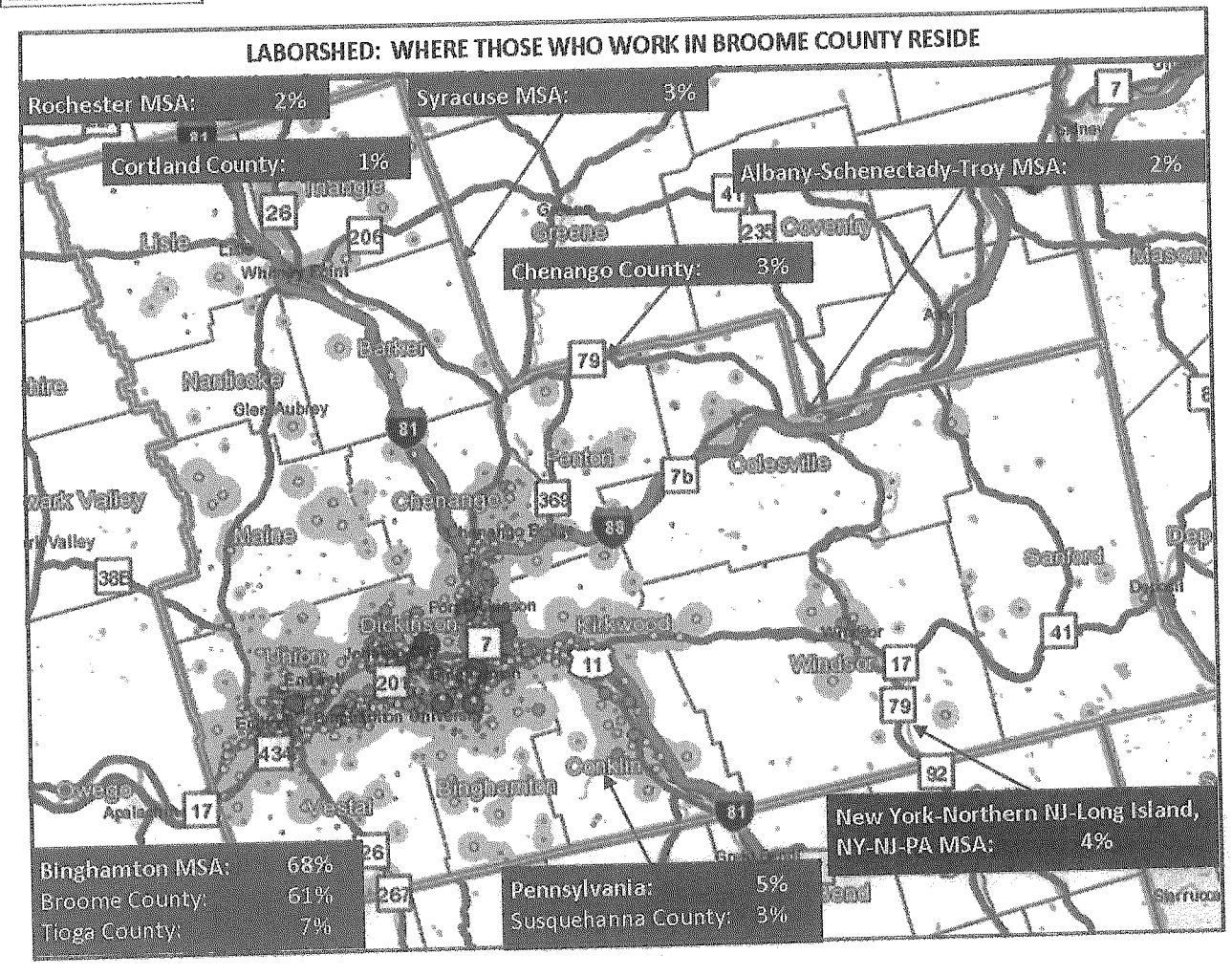
	Count	Share
Less than 10 miles	46,996	55.9%
10 to 24 miles	13,829	16.5%
25 to 50 miles	5,269	6.3%
Greater than 50 miles	17,929	21.3%

Source: U.S. Census Bureau, OnTheMap Application and LEHD Origin-Destination Employment Statistics. Note: Due to differences in methodology, the job counts shown are not comparable to those from other sources.

Broome County draws a sizable part of its workforce, about 5%, from over the border in Pennsylvania. The majority (2,726) commute from adjacent Susquehanna County, with several hundred coming from Bradford County.

[4] Data used to develop the Laborshed and Commutershed profiles was extracted from the U.S. Census Bureau, Local Employment Dynamics (LED) Origin-Destination Database which is utilized in LED's OnTheMap application.

[5] Initially, it was speculated that the 3,298 workers from the NYC metro area might be employees of BAE and IBM, both of which have facilities downstate. It turns out, however, that these workers from downstate are employed in multiple communities, including the City of Binghamton (1,039) and the Towns of Union (846), Vestal (606), and Dickinson (503). The majority are employed in the service sector: e.g., education, health care, or professional services.

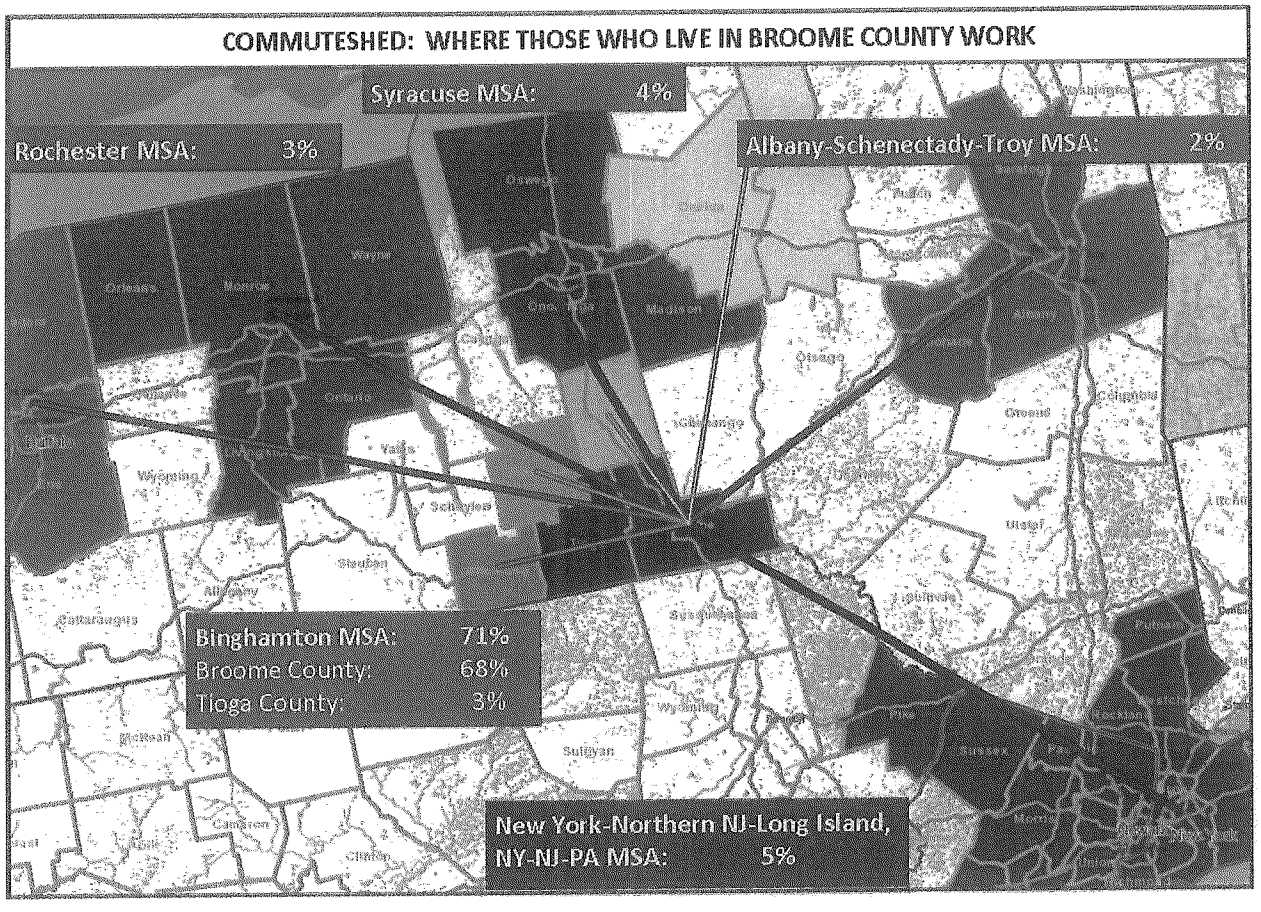


The commuteshed, the area in which Broome County *residents* are employed, is slightly more compact than the labor shed (because the County is a net importer of labor). Approximately 72% of County residents work in the Binghamton MSA, most in Broome County itself. Nearly 3,000 residents (3.9%) commute to work in the Syracuse metro area and 1,944 (2.6%) to the Rochester metro area. Relatively few Broome County residents are employed in Pennsylvania. However, more than 5% of those who reside locally apparently commute to jobs (mostly in the service sector) based in the New York City metropolitan area.

Table 10: Job Counts by Distance Traveled from Home, Broome County Commuteshed

	Count	Share
Less than 10 miles	46,127	61.1%
10 to 24 miles	9,221	12.2%
25 to 50 miles	3,603	4.8%
Greater than 50 miles	16,605	22.0%

Source: U.S. Census Bureau, OnTheMap Application and LEHD Origin-Destination Employment Statistics. Note: Due to differences in methodology, the job counts shown are not comparable to those from other sources.



Of the more than 30,000 people leaving the Binghamton metro area to work each day, 8,589 (28%) are young people age 29 and under. These young adults are more likely than workers of other ages to travel more than 50 miles for employment.

The data from OnTheMap clearly show that Broome County has a relatively large laborshed, drawing workers from other parts of upstate New York as well as Pennsylvania and the New York City metropolitan area. On the other hand, the majority of employed residents *living* in Broome County work in the Binghamton MSA. Broome County's geographic location and interstate access facilitate travel to and from other regions of the state. This is an asset not only for the local workforce, but also for the companies that locate in Broome County.

Employment Dynamics

This section assesses various employment dynamics in Broome County based on data from the U.S. Census Bureau's Longitudinal Employer-Household Dynamics (LEHD) program. The LEHD program provides Quarterly Workforce Indicators (QWIs) including employment, new hiring activity,

turnover rates, and earnings that can be analyzed by geography, age, gender, and educational attainment.[6]

Employment by Age

The majority of those employed by the private sector in Broome County are between the ages of 25 and 54 – prime working-age – with the largest share (24.8%) comprised of individuals ages 45 to 54.

The aging of the Baby Boom generation has led to an increase in the proportion of workers age 55 years and older, however. In 2000, 12.3% of workers in private industry in Broome County were age 55 and over, while 20.8% are in this age group today. At the same time, the percentage of workers in the 25-54 age group declined from 69.8% to 63.4%.

As shown in **Table 11**, 16.4% of workers in private industry in Broome County are 55-64 and 4.4% are age 65 and over. Industry sectors with higher than average percentages of older workers include manufacturing (27.3%), real estate and rental and leasing (27.0%), finance and insurance (26.2%), and transportation and warehousing (25.3%). More than one in four workers employed in the production of computers and electronics, machinery, and fabricated metals is age 55 and over. There is also a relatively high proportion of retirement-age workers among insurance carriers and social assistance providers in Broome County.

Industries with a high proportion of workers approaching retirement age may need to plan for increased recruiting efforts and training programs to address the loss of older workers. Possible options include bringing in experienced employees from outside the region, hiring individuals with similar skills from other industries, or encouraging workers to delay their retirement by offering flexible schedules or higher pay. It is likely that some job openings will remain vacant, with responsibilities shifted to other employees. Training and mentoring will be necessary to minimize the loss of institutional knowledge. Employers may look to technology to reduce their reliance on labor. Technological changes not yet identified could even make certain categories of employment obsolete.

[6] Due to differences in methodology, QWI employment counts are not comparable to those from other sources.

Table 11: Broome County Workforce Distribution by Age Group

	Young	Prime Working-Age			Pre- and Post-Retirement Age		Total, 55+
	14-24	25-34	35-44	45-54	55-64	65-99	
All Industry Sectors (Public and Private)	13.5%	19.1%	18.8%	26.1%	17.8%	4.7%	22.5%
All Private Industry Sectors	15.8%	20.2%	18.4%	24.8%	16.4%	4.4%	20.8%
Manufacturing	5.0%	13.3%	18.2%	36.1%	24.2%	3.1%	27.3%
Real Estate and Rental and Leasing	9.9%	19.3%	19.1%	24.7%	19.6%	7.4%	27.0%
Finance and Insurance	4.7%	19.2%	20.8%	29.0%	20.6%	5.6%	26.2%
Transportation and Warehousing	8.3%	14.7%	22.5%	29.0%	18.8%	6.5%	25.3%
Other Services	17.6%	18.9%	17.4%	21.2%	16.6%	8.2%	24.8%
Professional and Technical Services	7.2%	23.2%	19.2%	25.8%	18.2%	6.3%	24.5%
Health Care and Social Assistance	10.0%	20.7%	19.5%	25.5%	19.4%	4.7%	24.1%
Management of Companies	11.3%	19.5%	22.0%	25.1%	17.9%	4.2%	22.0%
Information	8.7%	25.6%	21.7%	24.2%	16.7%	3.0%	19.7%
Wholesale Trade	10.0%	20.3%	22.7%	27.8%	15.2%	4.0%	19.2%
Arts, Entertainment, and Recreation	29.0%	18.8%	15.2%	18.1%	13.2%	5.4%	18.6%
Retail Trade	29.3%	20.0%	14.9%	17.5%	12.9%	5.3%	18.2%
Administrative and Waste Services	17.5%	25.7%	18.4%	21.5%	12.8%	4.0%	16.8%
Construction	9.8%	23.3%	23.3%	29.7%	10.9%	2.9%	13.8%
Accommodation and Food Services	39.6%	25.0%	13.6%	13.0%	6.4%	2.3%	8.7%
Selected Industries (with NAICS Codes)							
Computer and Electronic Product Mfg (334)	2.3%	12.1%	15.7%	39.1%	28.3%	2.5%	30.7%
Insurance Carriers & Related Activities (524)	3.5%	16.4%	21.2%	30.2%	22.5%	6.2%	28.7%
Machinery Manufacturing (333)	3.1%	11.1%	16.0%	41.6%	26.6%	1.5%	28.1%
Fabricated Metal Product Mfg (332)	5.1%	12.7%	19.9%	34.3%	22.6%	5.1%	27.7%
Social Assistance (624)	11.1%	21.8%	18.5%	23.0%	18.8%	6.6%	25.4%
Ambulatory Health Care Services (621)	6.8%	18.4%	22.6%	27.3%	19.4%	5.6%	24.9%
Hospitals (622)	9.0%	21.4%	18.5%	26.4%	21.0%	3.6%	24.6%
Truck Transportation (484)	5.1%	14.3%	24.5%	32.7%	18.6%	4.8%	23.4%
Merchant Wholesalers Durable Goods (423)	8.2%	17.8%	22.1%	29.0%	17.4%	5.4%	22.7%
Nursing and Residential Care Facilities (623)	16.1%	21.1%	18.9%	23.3%	15.7%	4.7%	20.4%
Credit Intermediation & Related (522)	8.4%	26.8%	21.2%	25.7%	14.6%	3.3%	17.9%
Food Manufacturing (311)	15.4%	15.4%	21.5%	30.7%	15.2%	1.4%	16.6%
Merchant Wholesalers Nondurables (424)	11.0%	22.2%	23.5%	27.0%	13.1%	3.1%	16.1%
Specialty Trade Contractors (238)	9.8%	23.5%	24.2%	29.2%	10.3%	3.0%	13.3%
Heavy/Civil Engineering Construction (237)	10.4%	25.4%	22.7%	28.6%	10.2%	2.7%	12.9%

Source: U.S. Census Bureau, Local Employment Dynamics Program. Quarterly Workforce Indicators (QWI) data; based on averages for last 4 quarters, ending Q1 2012. Unless otherwise noted, all industries listed are private sector only. Some sectors not shown.

Table 12: Broome County Workforce Distribution by Gender and Educational Attainment

	Male	Female	Age 25 and Over Only			
			Less than HS	HS Diploma	Some College or Associate	Bachelor's Degree or Higher
All Industry Sectors, Public and Private	49.2%	50.8%	8.9%	30.0%	33.4%	27.7%
All Private Industry	50.8%	49.2%	10.1%	31.8%	33.7%	24.4%
Professional and Technical Services	48.5%	51.5%	5.2%	21.7%	31.0%	42.1%
Finance and Insurance	37.3%	62.7%	4.8%	22.4%	32.9%	39.9%
Information	56.8%	43.2%	7.0%	25.1%	31.0%	36.9%
Health Care and Social Assistance	21.3%	78.7%	7.2%	27.0%	38.3%	27.4%
Management of Companies	41.8%	58.2%	7.5%	29.9%	35.2%	27.0%
Manufacturing	71.6%	28.4%	9.2%	33.3%	32.5%	25.0%
Arts, Entertainment, and Recreation	51.3%	48.7%	10.4%	31.6%	32.9%	25.0%
Other Services	41.5%	58.5%	11.2%	32.5%	33.9%	22.3%
Wholesale Trade	78.3%	21.7%	10.2%	34.8%	33.8%	21.3%
Real Estate and Rental and Leasing	65.9%	34.1%	12.6%	33.7%	33.5%	20.1%
Administrative and Waste Services	61.4%	38.6%	14.7%	34.6%	32.2%	18.5%
Transportation and Warehousing	80.5%	19.5%	12.0%	37.5%	33.0%	17.6%
Retail Trade	50.1%	49.9%	12.8%	38.1%	32.7%	16.4%
Accommodation and Food Services	46.1%	53.9%	17.7%	37.4%	30.0%	14.8%
Construction	88.7%	11.3%	13.8%	39.6%	31.7%	14.8%
Selected Industries (with NAICS Codes)						
Insurance Carriers & Related Activities (524)	39.2%	60.8%	4.4%	21.9%	33.2%	40.6%
Credit Intermediation & Related (522)	31.5%	68.5%	6.0%	24.7%	33.6%	35.7%
Computer and Electronic Product Mfg (334)	69.0%	31.0%	6.0%	26.5%	33.1%	34.4%
Ambulatory Health Care Services (621)	20.8%	79.2%	5.8%	24.7%	37.6%	31.9%
Hospitals (622)	21.1%	78.9%	6.1%	25.5%	39.6%	28.8%
Machinery Manufacturing (333)	79.7%	20.3%	7.8%	31.5%	34.2%	26.5%
Social Assistance (624)	22.8%	77.2%	9.9%	30.8%	36.8%	22.6%
Nursing and Residential Care Facilities (623)	21.2%	78.8%	9.8%	31.1%	37.3%	21.8%
Merchant Wholesalers Durable Goods (423)	78.0%	22.0%	9.9%	36.1%	33.2%	20.8%
Merchant Wholesalers Nondurables (424)	79.2%	20.8%	10.6%	35.1%	34.4%	19.9%
Food Manufacturing (311)	67.4%	32.6%	10.2%	40.5%	33.0%	16.3%
Truck Transportation (484)	87.2%	12.8%	11.7%	39.8%	32.6%	15.9%
Heavy/Civil Engineering Construction (237)	89.3%	10.7%	13.6%	41.0%	30.1%	15.3%
Specialty Trade Contractors (238)	89.2%	10.8%	14.0%	39.1%	32.5%	14.4%
Fabricated Metal Product Mfg (332)	83.4%	16.6%	12.8%	41.3%	32.0%	13.9%

Source: U.S. Census Bureau, Local Employment Dynamics Program. Quarterly Workforce Indicators (QWI) data; based on averages for last 4 quarters, ending Q1 2012. Unless otherwise noted, all industries listed are private sector only. Some sectors not shown.

Employment by Gender

As indicated by the data in **Table 12**, the workforce in Broome County is about evenly split between men and women. There are, however, several industry sectors in which either men or women predominate. Among the sectors in which men comprise 70% or more of the workforce are construction, transportation and warehousing, wholesale trade, and manufacturing. The only sector in which women account for a significantly greater share of the workforce is health care and social assistance.

These characteristics are generally consistent with those for the state as a whole: in New York State, the workforce in the construction and transportation and warehousing sectors is disproportionately male, while workers employed in health care and social assistance are disproportionately female.

Employment by Educational Attainment

The LEHD program captures QWI data on the educational attainment of workers in four categories: 1) those with less than a high school diploma; 2) those with a high school diploma or its equivalent; 3) those who have attended some college or have an associate degree; and 4) those who have a bachelor's degree or higher. The data are restricted to workers age 25 years and over.

In **Table 12**, industry sectors are ranked by the percentage of workers with at least a bachelor's degree. Professional and technical services, finance and insurance, and information are the top three sectors; more than a third of the workforce in each of these sectors has a bachelor's degree or higher. Health care and social assistance and management also have above-average proportions of workers with at least a bachelor's degree.

Other industries on the list have lower levels of educational attainment. Construction and hospitality are tied for the lowest, with fewer than 15% of workers possessing a four-year degree.

Contrary to the perception that the manufacturing workforce is not well-educated, there are relatively high rates of educational attainment among workers in computer and electronics and machinery manufacturing in Broome County. Banking and insurance employees also have high levels of educational attainment.

Although each industry relies on a different mix of occupations and skills, understanding the educational attainment of the incumbent workforce in Broome County can help to identify the minimal educational requirements for employment.

New Hires

In the first quarter of 2012, there were more than 10,000 new hires across all industry sectors in Broome County (**Table 13**). Nearly two-thirds of the hiring activity occurred in five industry sectors: accommodation and food services, retail trade, administrative services and waste management, health care, and construction.

Table 13: Volume of New Hires by Industry and Age, Broome County

	Total	14-24	25-44	45-54	55-64	65-99
All NAICS Sectors, Public and Private	**10,515**	**4,109**	**4,140**	**1,415**	**674**	**177**
All Private Industry	**9,645**	**3,748**	**3,841**	**1,311**	**591**	**154**
Accommodation and Food Services	1,880	1,068	615	133	47	17
Retail Trade	1,625	829	536	156	81	23
Administrative and Waste Services	1,437	476	664	197	80	20
Health Care and Social Assistance	1,154	349	507	189	89	20
Construction	831	160	404	193	64	10
Manufacturing	523	150	206	107	52	8
Other Services	456	182	172	56	32	14
Wholesale Trade	449	127	201	82	35	4
Professional and Technical Services	291	90	124	40	27	10
Government	267	117	75	37	30	8
Arts, Entertainment and Recreation	241	130	75	22	14	0
Real Estate and Rental and Leasing	164	46	74	26	14	4
Transportation and Warehousing	144	33	61	30	16	4
Information	141	48	61	22	10	0
Finance and Insurance	112	30	53	20	9	0

Source: U.S. Census Bureau, Local Employment Dynamics Program. Quarterly Workforce Indicators (QWI) data; based on averages for last 4 quarters, ending Q1 2012. Unless otherwise noted, all industries listed are private sector only. Some sectors not shown.

It is important to note that *the number of new hires does not directly equate to an increase in total employment*. The new hires count is simply an indication of hiring activity in an industry. Workers may be hired to fill newly created jobs, or to replace workers who have left (or both). Separations, both voluntary (retirement, leaving for a new job) and involuntary (layoffs, firings) account for the other half of the employment change equation.

Men accounted for 53% of the new hires. With respect to age, the number of new hires ranged from 177 among those age 65 and over to 4,140 among those between the ages of 25 and 44.

The average monthly earnings of new hires across all industries were about $2,000. The highest earnings for new hires were in finance and insurance, followed by manufacturing, construction, and professional and technical services. Within these sectors, average earnings were especially high for new hires in machinery manufacturing ($5,987), computer and electronics manufacturing ($5,888), and computer systems design and related services ($5,872).[7]

Table 14: New Hire Earnings by Industry, Broome County

	Average Monthly Earnings		Ratio of New Hires vs. All Workers
	New Hires	All Workers	
All NAICS Sectors, Public and Private	**$1,997**	**$3,594**	**55.6%**
All Private Industry	**$2,016**	**$3,468**	**58.1%**
Finance and Insurance	$3,635	$4,919	73.9%
Manufacturing	$3,632	$4,864	74.7%
Construction	$3,394	$4,381	77.5%
Professional and Technical Services	$3,286	$4,570	71.9%
Wholesale Trade	$2,977	$4,067	73.2%
Management of Companies	$2,735	$4,259	64.2%
Information	$2,425	$3,561	68.1%
Health Care and Social Assistance	$2,349	$3,897	60.3%
Transportation and Warehousing	$2,328	$3,342	69.7%
Real estate and Rental and Leasing	$1,987	$2,772	71.7%
Administrative and Waste Services	$1,757	$2,407	73.0%
Arts, Entertainment and Recreation	$1,433	$1,424	100.6%
Other Services	$1,244	$1,845	67.4%
Retail Trade	$1,233	$2,116	58.3%
Accommodation and Food Services	$919	$1,293	71.1%

Source: U.S. Census Bureau, Local Employment Dynamics Program. Quarterly Workforce Indicators (QWI) data; based on averages for last 4 quarters, ending Q1 2012. Unless otherwise noted, all industries listed are private sector only. Some sectors not shown.

A high ratio between new hire earnings and the earnings of all workers in that industry suggests that employees are being hired for high-level positions, or that there is an unusually strong demand for labor. This was the case with finance and insurance, construction, manufacturing, and arts, entertainment, and recreation, as well as with significant Broome County industries such as machinery manufacturing (112.1%), computer and electronics manufacturing (97.4%), insurance carriers (84.2%), and nondurable goods wholesalers (77.8%).

Employee Turnover

The employee turnover rate is a measure of workforce stability; it measures the movement of workers into and out of jobs, including retirements. In Broome County, the average quarterly turnover rate for all private sector workers (over the last four quarters, ending Q1 2012) was 8.9%. This is comparable to a turnover rate of 9.0% for New York State overall during the same period.

Turnover rates vary by industry and age: for example, teens and young adults tend to have relatively high turnover rates, and employee turnover is generally higher in low-wage industries such as retail and food services.

[7] NAICS 333, 334, and 5413, respectively.

Rates of turnover also indicate the extent to which employers will be able to find replacements for workers who are retiring or leaving for other jobs. Industries with relatively high turnover rates may find it easy to find replacements; those with low rates of turnover may face challenges in recruiting individuals with specific skill sets.

Local Employment Dynamics data indicate that in Broome County, the lowest employee turnover rates are in manufacturing, followed by finance and insurance. The turnover rate is particularly low in some of the County's largest industries: computer and electronics manufacturing (2.6%), insurance carriers (3.6%), and hospitals (3.9%).

On one hand, low employee turnover reflects a stable workforce. However, low rates of turnover combined with a large proportion of workers close to retirement age indicates the potential for labor shortages in certain industries. Indeed, as previously mentioned, there is a correlation between turnover and age.

Table 15: Employee Turnover Rates in Selected Industry Sectors

	Broome County	New York State
All NAICS Sectors, Public and Private	**7.9%**	**8.2%**
All Private Industry	**8.9%**	**9.0%**
Construction	15.0%	12.6%
Manufacturing	4.6%	5.4%
Wholesale Trade	7.1%	6.5%
Retail Trade	11.2%	10.4%
Transportation and Warehousing	8.8%	8.0%
Information	5.8%	8.3%
Finance and Insurance	5.4%	6.2%
Professional and Technical Services	7.4%	8.3%
Health Care and Social Assistance	5.8%	7.4%
Accommodation and Food Services	15.4%	14.2%
Arts, Entertainment, and Recreation	20.3%	14.7%
Real Estate and Rental and Leasing	9.0%	6.5%
Management of Companies	5.6%	7.0%

Source: U.S. Census Bureau, Local Employment Dynamics Program. Quarterly Workforce Indicators (QWI) data; based on averages for last 4 quarters, ending Q1 2012. Unless otherwise noted, all industries listed are private sector only.

The question is whether the aging of the workforce in Broome County can be addressed in the near future. As workers in certain industries begin to retire, will they be replaced with individuals with similar levels of educational attainment and skill? Are local colleges and universities and training providers preparing people for these jobs? Or will businesses in the County need to recruit people from other locations? These are questions that must be considered in the context of the comprehensive plan and economic development initiatives in Broome County, the Southern Tier, and New York State.

Education and Training Programs

Career and Technical Education

Broome-Tioga BOCES serves 15 school districts in the Binghamton MSA, including all 12 districts in Broome County. It offers Career and Technical Education (CTE), primarily on a half-day basis, to high school juniors and seniors from component districts. CTE courses provide students an opportunity to learn job skills through instruction and hands-on experience. Successful students

are prepared to enter the workforce, earn a technical degree, and/or advance to college with credits earned through articulation agreements. CTE content areas include:

- Automotive Technology
- Building Trades
- Business/Communications
- Health Science
- Manufacturing
- Personal Services (e.g., culinary arts, food industry, cosmetology)

According to Broome Tioga Workforce New York, the manufacturing program has been a "hard sell" to young adults, and BOCES no longer offers CNC/machining courses to high school students. Students in the building trades program attend classes in carpentry, masonry, and electricity. A plumbing/HVAC class is not currently offered due to the cost of equipment and the reorganization of class space on campus, but is expected to be reinstated in the future.

Other BOCES programs include New Visions, an academically rigorous program for college-bound high school seniors interested in careers in health, education, engineering, or law and government; alternative education for youth deemed to be at-risk; a GED program for students ages 16 to 21 who are unlikely to complete the requirements for a high school diploma; and adult CTE programs enabling participants to access employment or career advancement.

Colleges and Universities

An important aspect of the labor supply is college enrollment, and the number of annual graduates within specific programs. As of fall 2011, there were 20,946 students enrolled at Binghamton University and Broome Community College, the majority (86.2%) as undergraduates. If all post-secondary educational institutions in the Southern Tier plus neighboring Cortland County are counted, there are nearly 62,000 students attending colleges in and around Broome County.

Table 16: Colleges and Universities in the Region

Name	Location	Enrollment: Total / Undergraduate
Binghamton University (SUNY Binghamton)	Broome County	14,746 / 11,861
Broome Community College	Broome County	6,200 / 6,200
SUNY Cortland	Cortland County	7,331 / 6,371
Tompkins Cortland Community College	Tompkins County	5,662 / 5,662
Cornell University	Tompkins County	21,131 / 14,167
Ithaca College	Tompkins County	6,760 / 6,276

Source: U.S. Department of Education, National Center for Educational Statistics.

Within Binghamton University (BU) are seven schools and colleges: Harpur College of Arts and Sciences, Decker School of Nursing, the School of Management, Watson School of Engineering and Applied Science, the College of Community and Public Affairs, the School of Education, and the Graduate School. Harpur College comprises about 65% of undergraduate enrollment, followed by the Watson School, with 16%.

In the 2011-12 school year, Binghamton University (BU) awarded a total of 3,121 bachelor's degrees. The number of bachelor's degrees was highest in the social sciences (474); business, management, and marketing (452), including accounting and finance; psychology (297); engineering (290), including mechanical, industrial, and electrical engineering and bioengineering; biology and biomedical sciences (279); and English language and literature (243). BU also has a registered nursing program which had 169 graduates.

According to the BU website, 20% of undergraduates go on to receive a graduate degree from the university. In 2011-12, BU awarded 833 master's degrees, with the largest numbers in business (204) and engineering (137).

Broome Community College (BCC) awarded 1,046 associate's degrees in the 2011-12 school year. The number of two-year degrees was highest in liberal arts and sciences (435), health professions and related programs (185), and business (160). BCC has one of the largest health sciences programs of any community college in the state, drawing students from Pennsylvania as well as New York. It also has a strong engineering program; many graduates transition to engineering programs at BU.

Recognized as critical community assets, both Binghamton University and Broome Community College are continuing to pursue opportunities for growth: BU with the development of high-tech research centers to stimulate innovation and spin-off job creation; BCC with the creation of new facilities to house students from outside the County and accommodate an expanding hospitality program. Both institutions are involved with efforts to construct a high technology incubator in downtown Binghamton, and they maintain close relationships with many of the region's major employers, eager to contribute to Broome County's economic development.

Training

The Broome Tioga Workforce Investment Board (WIB) serves as the administrative entity for federal Workforce Investment Act (WIA) funds in Broome County. It operates the Broome Employment Center in Binghamton (and a similar facility in Owego, Tioga County), where visitors can receive information about demand occupations and training opportunities, access job listings, participate in computer workshops, or meet with an employment counselor for help finding a job.

According to the Broome Tioga Local Plan for FFY 2012, current and projected demand occupations in the local area include:

- **Health care practitioners and technical occupations:** Registered nurses, physical therapists, medical and clinical laboratory technicians, dental hygienists, emergency medical technicians and paramedics, licensed practical and licensed vocational nurses, medical records and health information technicians, physician assistants, nurse practitioners

- **Health care support occupations:** Home health aides, nursing aides, orderlies and attendants, occupational therapist assistants and aides, physical therapy assistants and aides, dental assistants, medical assistants, personal care aides

- **Transportation occupations:** Heavy and tractor-trailer truck drivers; laborers and freight, stock, and material movers; industrial truck and tractor operators, light truck or delivery service drivers

- **Production occupations:** Team assemblers, computer-controlled machine tool operators, multiple machine tool setters and operators, welders

- **Construction and extraction occupations:** Brick masons; carpenters; electricians; plumbers, pipe fitters, and steamfitters; construction workers; sheet metal workers

The plan adds: "Based on the number of job openings posted by regional employers, United Health Services and Lourdes Hospital, multiple extended care facilities and nursing homes, the Board has determined that all levels of Healthcare Support Occupations and Healthcare Practitioners are considered High Demand occupations in the Broome Tioga LWIA. Second to Healthcare occupations are occupations in the Transportation industry targeted primarily to tractor-trailer drivers and warehousing positions. Many of the driver openings are a result of the increased hauling of equipment and water related to the natural gas industry."

Eligible Broome County residents can use federal WIA funds to pay for training programs that have been WIA-certified. Training programs consist of one or more courses that, upon successful completion, lead to credentials such as a diploma, industry-recognized certificate or licensure, associate degree, or bachelor's degree. The process provides standards that training providers must meet in order to receive WIA training dollars.

The NYS Department of Labor lists the following eligible training providers in Broome County:

- Broome County Urban League
- Broome Community College
- Broome-Tioga BOCES
- Family Enrichment Network, Inc.
- Link Environmental Services
- Local 325 IBEW Joint Apprenticeship Program
- Maines Driver Training Institute
- SAGE Truck Driving School CDL Training
- SUNY Empire State College
- Upstate Training

Three of the providers – Family Enrichment Network, Maines Driver Training Institute, and the Sage Truck Driving School – offer CDL truck driver training. Others, including the Local 325 IBEW, Link Environmental Services, and Broome-Tioga BOCES, provide training in the construction trades. The vast majority of the training is through Broome-Tioga BOCES and Broome Community College. They offer certificate and associate's degree programs in fields such as accounting, office administration, computer science, health care, engineering technology, criminal justice and homeland security, hotel and restaurant management, and early childhood education.

The Broome Tioga WIB is currently involved in a sector-based training initiative to train individuals for employment in the gas extraction industry. Known as ShaleNET, this initiative is being funded by a three-year, multi-state grant from the U.S. Department of Labor. The mission of the grant is to design a comprehensive recruitment, training, placement, and retention program for high-priority occupations in the natural gas drilling and production industry throughout the Marcellus Shale footprint.

Applicants have been screened and assessed prior to enrolling in the ShaleNET training or in an introduction to gas drilling funded by the state. It is anticipated that 40-45 individuals will be trained for jobs related to this industry sector. Although New York State has not yet approved Marcellus shale gas extraction, it is anticipated that trained workers will be able to fill job openings in border Pennsylvania counties.

On-the-job training (OJT) contracts have also been a means for local employers to hire and train new employees. The Broome-Tioga WIB can reimburse employers for up to 90% of an individual's wages while that individual is participating in OJT. Some OJT contracts are paid for out of WIA funds, others through a National Emergency Grant OJT program. Broome-Tioga has been one of the major users of this statewide grant as it has been very successful in returning unemployed adults and dislocated workers back to employment.

Broome County companies with OJT contracts in FFY 2012 have included Arctic Bear Plumbing, BlueStorm Technologies, Crowley Fabricating, Devonian Stone, Evolution Consulting, Foam It Insulation, Modern Marketing Concepts, R&M Small Engine Repair, STCR Business Systems, TeamWorld, and Triple Cities Metal Finishing. The types of positions for which workers are being trained range from customer service and sales representatives to HVAC and small engine technicians, from data entry specialists to machinists and sheet metal fabricators. Nearly $400,000 has been committed to OJT contracts to date.

The Broome-Tioga WIB is also engaged in a Chamber of Commerce OJT program that was awarded through a legislative member item. Broome-Tioga conducts much of the matching and completes all of the jobseeker assessment and required data entry; the Greater Binghamton Chamber of Commerce writes the contract and issues the payments to the employer. The additional funding has helped to increase job placements in the area.

Within the context of the Southern Tier REDC's Strategic Economic Development Plan, the Workforce Investment Boards in the Southern Tier, including the Broome-Tioga WIB, have committed to targeting resources and identifying additional resources to train or upgrade the skills of the energy sector workforce. The Energy Workforce Development Initiative will "develop a highly qualified and vibrant workforce prepared to respond to the opportunities resulting from the emergence of the energy industry in the Southern Tier for projects such as wind farm construction and maintenance; weatherization of homes, businesses, and public buildings for maximum efficiency; retrofit of residential and commercial facilities for efficiency improvements and installation of biomass heating systems; expanded research and manufacturing of existing and new solar energy technology products; increasing energy efficiency use in buildings through improved weatherization and application of electricity-saving technologies; and natural gas extraction and operations."[8] The intention of the initiative is to offer skills that are adaptable as the energy industry evolves. Other workforce development system tasks to implement regional strategies are shown in **Table 17**.

[8] Southern Tier Regional Economic Development Council, *Strategic Economic Development Plan: 2011–2016*, p. 118.

Table 17: Southern Tier Workforce Development Priority Goals and Tasks, 2012 – 2013

Goal	Action Item	Tasks
Strategy 1. The Southern Tier… New York's Leader in Energy Efficiency and Renewable Energy Technology	Residential and Small Scale Commercial Retrofit Energy Development Alliance for New York EDANY	▪ Assist customers in identifying and attending local BOCES and community colleges in renewable energy and energy efficiency-related programs. ▪ Pursue grant opportunities that target energy efficiency and renewable energy occupations. ▪ Identify existing energy sector career marketing materials; review and create regional materials for marketing. ▪ Promote energy sector careers distribution of energy sector related marketing materials to youth, adults and dislocated workers. ▪ Jointly promote advanced manufacturing sector related careers utilizing the Workforce NY Career Centers in the Southern Tier region as well as connections with school districts, youth program providers, etc.
Strategy 2. Southern Tier Transportation Alliance: Building Next Generation Technology and Manufacturing	Southern Tier Transportation Industry Cluster	▪ Assist customers in identifying and attending local BOCES and community colleges in advanced manufacturing related programs. This includes financial assistance, if funding is available. ▪ Seek out and fund on-the-job training opportunities with advanced manufacturing employers as funding is available. ▪ Identify and apply for additional advanced manufacturing training funding. ▪ Assist employers in posting their advanced manufacturing positions and searching the talent bank for qualified employees.
Strategy 3. Health Care 2020… Integrating Health Care Providers, Higher Education and Cutting-Edge Technology	All	▪ Review existing health career marketing materials and career information, create new ones where necessary. ▪ Promote health careers through Workforce NY Career Centers in the Southern Tier, WIA youth programs, and existing relationships with other youth program providers and school districts. ▪ Assist employers in posting their health care positions and searching the talent bank for qualified employees.
Strategy 4. Revitalize the Rural Farm- and Forest-Based Economy	All	▪ Assist businesses with recruitment for agricultural occupations
Strategy 5. Strengthen the Region's Economic Development Backbone	All	▪ Assist employers in posting construction/building trades-related positions and searching the talent bank for qualified employees

Source: Southern Tier Regional Economic Development Council, *Strategic Economic Development Plan: 2011–2016* and Southern Tier REDC Workforce Development Work Group, *Work Plan Template – Workforce Development Priority Goals and Strategies, 2012-2013.*

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Attachment 2

Labor and Wage Rate Analysis

Attachment 2

Trade	Percentage	Total Labor Value	Per hr cost 2015	Total Hours	Avg Daily Man Power	Per hr cost 2016	2016 Labor increase @ 70% OF HOURS	Per hr cost 2017	2017 Labor increase @ 25% OF HOURS
Carpenter	7%	$ 3,131,438	$47.96	65,292.71	22.8	$48.92	$ 43,840.14	$49.90	$ 31,627.53
Drywall finisher	2%	$ 886,302	$47.51	18,655.06	6.5	$48.16	$ 8,488.05	$49.12	$ 7,523.59
Electrician	22%	$ 12,833,562	$62.54	205,205.66	71.7	$63.79	$ 179,554.95	$65.07	$ 129,577.11
Insulator	4%	$ 2,125,931	$56.98	37,310.12	13.0	$58.49	$ 39,436.80	$60.05	$ 28,635.52
laborer	6%	$ 2,440,641	$43.61	55,965.18	19.5	$44.91	$ 50,928.31	$45.81	$ 30,755.66
Painter	2%	$ 892,085	$47.82	18,655.06	6.5	$48.47	$ 8,488.05	$49.44	$ 7,552.50
Pipefitter	15%	$ 8,859,288	$63.32	139,912.95	48.9	$65.22	$ 186,084.22	$67.22	$ 136,415.13
Plumber	11%	$ 6,496,811	$63.32	102,602.83	35.8	$65.22	$ 136,461.76	$67.22	$ 100,037.76
Sheetmetal Worker	2%	$ 968,944	$51.94	18,655.06	6.5	$52.74	$ 10,446.83	$53.79	$ 8,650.35
Sprinkler Fitter	5%	$ 2,781,936	$59.65	46,637.65	16.3	$60.84	$ 38,947.10	$62.06	$ 28,097.55
Iron Worker	4%	$ 2,166,226	$58.06	37,310.12	13.0	$59.22	$ 30,327.16	$60.41	$ 21,878.88
Mill Wright	1%	$ 465,910	$49.95	9,327.53	3.3	$51.35	$ 9,140.98	$52.75	$ 6,529.27
Roofer	3%	$ 1,250,822	$44.70	27,982.59	9.8	$45.50	$ 15,670.25	$46.41	$ 11,962.56
Lathers	4%	$ 2,166,226	$58.06	37,310.12	13.0	$59.22	$ 30,327.16	$60.41	$ 21,878.88
Masons	5%	$ 2,560,407	$54.90	46,637.65	16.3	$56.00	$ 35,845.70	$57.12	$ 25,860.11
Operating engineers	7%	$ 4,518,908	$69.21	65,292.71	22.8	$71.04	$ 83,639.96	$72.93	$ 60,722.22
Total	**100%**	$ 54,545,454		**932,753.00**	**325.7**		**$ 907,627.43**		**$ 657,704.61**

Total Wage savings = $ 1,565,332

Total Bid Savings including Contractor OH&P = $ 1,900,000

Binghamton – Johnson City Joint Sewage Treatment Plant Restoration and Rehabilitation Project
DRAFT Milestones and Levels of Treatment During Construction

Milestone	Date	Plant Peak Flow Rate	Processes in Operation
Notice to Proceed	January 2016	60 mgd	• Coarse Screens (Binghamton side only) • Grit Removal • Primary Settling Tanks 1-10 with CEPT • Chlorine Disinfection
Plant Flow Reduction	February 2016	35 mgd	• Coarse Screens (Binghamton side only) • Primary Settling Tanks 1-6 with CEPT • Chlorine Disinfection
Substantial Completion 1	January 2018	60 mgd	• Coarse Screens (Binghamton side only) • Fine Screens • Aerated Grit Removal • Primary Settling Tanks 1-10(1) with CEPT • BAF CN Cells 1-8 (capacity 35 mgd) (2) • BAF DN Cells 1-4 (2) • UV Disinfection (3) (4) Note: (1) Settling Tanks 7-10 and Settling Tanks 3, 4 and 5 will be operational by January 2018, allowing primary treatment of up to 60 mgd. All ten of the settling tanks will be operational by April 2018. (2) BAF CN Cells 1-8 can treat up to 35 mgd, which is the design peak flow of BAF DN Cells 1-4. (3) The UV Disinfection is hydraulically connected to the BAF process. Whereas the UV system is designed for 60 mgd, the flow is limited during this period to 35 mgd (the BAF CN limit). (4) During this period, flows greater than 35 mgd will receive primary treatment and bypass the BAF process and UV disinfection, and will be disinfected using chlorine in Chlorine Contact Tank 2.
Substantial Completion 2	January 2019	60 mgd	• Coarse Screens (Binghamton side only) • Fine Screens • Aerated Grit Removal • Primary Settling Tanks 1-10 with CEPT • BAF CN Cells 1-14 • BAF DN Cells 1-4 • UV Disinfection

Note: Dates are an estimate. The actual dates and time periods may vary based on the construction schedule of the contractor.
Draft Rev 1: 09/21/2015.

Binghamton – Johnson City Joint Sewage Treatment Plant Restoration and Rehabilitation Project
DRAFT Milestones and Levels of Treatment During Construction

Note: Dates are an estimate. The actual dates and time periods may vary based on the construction schedule of the contractor.
Draft Rev 1: 09/21/2015.